

ESF RESEARCH CONFERENCES

Fostering collaboration across disciplines and generations

Encounters

Welcome!



This second issue of *Encounters* sees the light at the time of the ESF Assembly Science Policy Conference in Stockholm. This conference will be devoted to global environmental change as a domain where scientific progress

requires international cooperation. At the same time, ESF is initiating a Forward Look to explore the next generation of research questions on global change, where the focus will be on global environmental changes in the Anthropocene, with special emphasis on adaptation and mitigation.

This *Encounters* highlights ESF Research Conferences on global change. The non-exhaustive snapshot covers the physical processes of global change (in a conference on 'Climate Change') and the role of the Arctic climate in global change (in the first ESF-VR-FORMAS conference). It presents a conference on 'New Methodologies and Interdisciplinary Approaches in Global Change Research', but it also features impacts (in a conference series on environmental degradation and forced migration) and health effects (in a conference on innate immunity). A conference on 'Nanotechnology for Sustainable Energy' addressed nanotechnology as an enabler for sustainable energy supply, storage and conversion techniques.

These conferences approach the field from an interdisciplinary perspective, ensuring that the different communities working on global environmental change (including investigators of all expertise and age) meet to exchange knowledge and develop integrative new research efforts.

There is room for new ideas in conference topics (not only in global change) and of course you are encouraged to apply for participation. Researchers are the source of new ideas and determine the success of the conferences.

John Marks,
ESF Deputy Chief Executive

Foreword

Environmental issues will undoubtedly dominate the 21st century. To set the agenda for research and help secure a sustainable future for the planet and its people, ESF needs to identify those areas that are currently ignored or seen to be emerging.

ESF Research Conferences provide a unique opportunity to do this! By bringing together senior and young researchers from diverse backgrounds, the communication they facilitate will, hopefully, catalyse and evoke desire to develop further interdisciplinary and potentially more holistic research projects.

Hefin Jones,

Cardiff School of Biosciences (UK), Member of ESF Life, Earth and Environmental Sciences (LESC) Standing Committee

In this issue:

Global Environmental Change Research

ESF Research Conferences explore global change

- processes
- effects
- responses



ESF Research Conferences on **Global change exchanges**

Bridging the gap: natural sciences meet social sciences to tackle global change

ESF-FMSH-Entre-Sciences Conference on 'New Methodologies and Interdisciplinary Approaches in Global Change Research'

Given the scope of global change, scientists working on its varied processes and effects should exchange and use each others' findings on a regular basis. A demanding task, but a necessary one when integrative research is proving to be indispensable for facilitating the ultimate goal: a functional global sustainable society. An ESF-FMSH (Foundation Maison des Sciences de l'Homme)-Association Entre-Sciences Conference on 'New Methodologies and Interdisciplinary Approaches in Global Change Research' aims to bridge the gap to encourage the dialogue between the disparate research communities investigating global change.

The grounds for such collaboration have been developing for some time, to reach a point when, at present, 'it is simply unavoidable', agreed the conference chairs, Joël Guiot (CEREGE¹, FR) and Sylvie Thoron (GREQAM², FR). Initial global change research, because of the uncertainty of its predictions, was primarily a task for physicists. The need for more comprehensive climate models brought on board the work of biologists and chemists. With the 2007 IPCC³ report, which drew attention to the true extent, and meaning, of the current changes in climate, the cross-disciplinary requirements of the field became clearly evident. This called for input from the social sciences in order to assess the consequences for society.

The situation now is clear: climate change is real, urgent and a challenge which requires coordinated action in response. The key to such action lies in the assessment and recommendations science can provide, and governments can implement. 'There are three important aspects [which also informed the selection of topics for the conference]: the risk assessment, the mitigation problem, the adaptation problem', explained Thoron. Geo- and climatologists can deliver the hard facts, the physical alterations to our environment, measured, assessed and explained. They can also outline the different ways of managing the risks these represent. The efficiency and adequacy of countermeasures, however, also depend on their cost to society, economically, culturally and politically. Social constraints to mitigation and the difficulties of decision-making, studied in the realm of social sciences, are factors to be taken into account by all scientists working in this field. 'Now it is time when we need a full collaboration. But languages across disciplines are different and it is not so easy to communicate', commented Guiot.

1. Centre Européen de Recherche et d'Enseignement des Géosciences de l'Environnement

2. Groupement de Recherche en Économie Quantitative d'Aix-Marseille

3. Intergovernmental Panel on Climate Change



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As an incentive to 'learn' each others' languages, the conference will present participants with the new advances in the modelling of global change, combining both geosciences and economics. Current, past and future climate contexts, Earth system models, local and global ecosystems, mitigation strategies and their economic costs, and the problems linked to international climate negotiations and policy: all of these issues form part of the programme and will set off the discussions. 'Vulnerability of societies to climate change needs integrated models where warming is studied in terms of impacts and the costs of these impacts. The economic point of view is necessary to evaluate policies in order to mitigate the changes and to adapt', said Thoron in relation to the broad focus of the conference.

The conference will draw together senior and young researchers to discuss their common point of interest, climate change, in both formal and informal settings. The aim will be to optimise their communication and set the tone for future cross-disciplinary, integrative research projects.

► More information:
www.esf.org/conferences/08284

ESF-VR-FORMAS Conferences on Global Change Research address the Arctic region

The need for interdisciplinary discussions on the latest developments in global change research gave rise to a conference series, initiated in 2007: the ESF-VR-FORMAS Conferences on Global Change Research, organised in partnership with ESF's Member Organisations the Swedish Research Council (VR) and the Swedish Research Council Formas.

The series, which is for an initial period of four years, aims to identify topics that are key to the understanding of our rapidly changing global conditions, to facilitate contacts between leading scientists and younger researchers, and ultimately to lead to the development of collaborative networks for integrative research.

VR and Formas showed a keen interest in the 2006 ESF-JSPS conference for young researchers on 'Climate Change'⁴ that took place at Nynäshamn (SE), the town

4. See following article on 'Climate change: global effects, global exchanges'



which was later to become the venue for ESF-VR-FORMAS conferences. 'The 'Climate Change' conference addressed head-on different aspects of major climate issues and brought together the perspectives of both Asia and Europe', commented Jonas Björck, director of the research funding department at VR. Coupled with Sweden's long-standing commitment to sustainable development, both in the scientific and political contexts, the success of the 2006 conference set negotiations in motion for the new series in Sweden. The first ESF-VR-FORMAS conference took place in 2007 under the title 'Global Environmental Change: The role of the Arctic Region'.

The conference focused on the present, past and future states of the Arctic Region, aiming to feed into the 2007 research context marked by the start of the International Polar Year (IPY, 2007-09), and the publication of the fourth IPCC⁵ report. Discussions went beyond the Arctic's physical systems to consider also the socio-economic and legal implications of diminishing permafrost and sea ice cover – 2007 was the year when the lowest summer sea ice cover was ever recorded. 'The conference sought to bring together leading scientists from Europe and the rest of the world to assess the current state of thinking about the Arctic Region', commented Paul Egerton, head of the European Polar Board and one of the speakers. The multidisciplinary perspective enabled participants to look beyond the IPY and reflect on the necessary research agendas for the future. How to set up collaboratively an Arctic observing network, which monitors climate change over long periods of time, was one example of the possibilities discussed. Also on the programme were the effect of natural Arctic conditions on the local economies and quality of life, on international trade routes and commerce, and their profound indirect effect on regional climates in other parts of the world.

⁵ Intergovernmental Panel on Climate Change

The next ESF-VR-FORMAS conference is planned for 2009, and will explore the connections between climate and energy development. 'At the moment, climate might be seen as the most highlighted part of the global change arena', explained Uno Svedin, head of international relations at Formas. 'However, as time goes by, other issues such as water, energy production and food security are also coming to light. Our interest lies in the interplay between all these elements', continued Svedin.

The ESF-VR-FORMAS conference series will continue to provide a framework for multidisciplinary exchanges in order to cater to the new and growing research needs and interests arising from these global challenges. Integral to their format will be the distinctly European added value they provide in this research area, which has also proven to be highly relevant for international policy-making and governance.

► More information:

www.esf.org/conferences/esf-vr-formas
www.esf.org/conferences/07240

ESF Research Conference on *Global change processes*

Climate change – global effects, global exchanges

ESF-JSPS Frontier Science Conference for Young Researchers on 'Climate Change'

Climate change has become one of the most tangible factors destabilising our environment and it is all but a series of purely natural phenomena. It has already been universally recognised that humans are playing a major role in accelerating its pace and intensifying its impact.



© Dr. M. E. Hori

Participants at the ESF-JSPS conference on 'Climate Change' in Nynäshamn, SE

So how does our climate work? How can we predict its course? How is it driven by humans? These questions set the main themes of the 2006 ESF- JSPS (Japan Society for the Promotion of Science) conference for young researchers on 'Climate Change'.

Debating these questions, participants unanimously agreed that Earth system models, which integrate dynamic descriptions of anthropogenic land use and emissions, outline the future for climate research. They also attributed a fundamental role to the increased collaboration between model and observation scientists in facilitating future developments in the field.

Talks at the conference focused on the past, present and future climate systems, with a strong emphasis on climate modelling. In the course of discussions, participants referred to palaeoclimate data, stratospheric chemistry, forest thinning and institutional vulnerabilities to climate change. The thematic variety was aimed at introducing young scientists to a comprehensive interdisciplinary overview of the latest climate research and at stimulating their interaction with leading senior colleagues. Additionally, the conference was an initiative to strengthen the links between European and Japanese scientists.

The young researchers involved reported that the range of disciplines covered by the conference helped them to recognise the broadness of the field and the multitude of approaches within it. They also enjoyed the many networking opportunities, which have enabled them to build working relationships with established scientists and benefit from valuable critical feedback on their work. As a result, some young Japanese participants now keep close contact with European counterparts, exchanging strategy and progress across continents.

Courtesy of JSPS



The conference chairs, Kevin Noone (Royal Swedish Academy of Sciences, IGBP, SE) and Shoichiro Fukao (Kyoto University, JP)

The conference proved particularly successful in demonstrating the benefits of interdisciplinary exchanges. 'Young scientists were very stimulated by various disciplines outside of their own at the conference and now make positive efforts to participate in similar meetings beyond their disciplines', commented a senior Japanese participant.

During their interactions, European and Japanese scientists shared knowledge of both the regional and the global causes and effects of climate change and identified global teleconnections in the climate system. An example were the parallels they drew between the process of mountain building in the Tibetan plateau region, the Asian monsoon circulation, solar cycles and the Dansgaard-Oeschger climate fluctuations during the last glacial period. Such exchanges enabled participants to develop a more holistic understanding of climate change and to consider joint projects for further research.

'Climate change is global. Therefore, research efforts, as well as mitigation measures, also need to be global', said Shoichiro Fukao (RISH⁶, Kyoto University, JP), one of the conference chairs. 'This conference has opened a future possibility for full-scale collaborative research between Europe and Japan. It was useful not only for exchanging ideas in research fields of mutual interest but also for understanding priority differences between Japan and Europe,' concluded Fukao.

► More information:
www.esf.org/conferences/06214

ESF Research Conferences on *Global change effects*

Environmental change hits home

ESF-ZiF-Bielefeld Conference Series on 'Environmental Degradation and Forced Migration'

The changes currently observed in faunal migration patterns as a consequence of the effects of environmental change are well reported in the scientific literature. What has not received much attention, at least until the publication of the fourth IPCC⁷ and the Stern Reports, is the effect of such changes on human migration. While estimates vary, the IPCC and Stern reports quote figures ranging between 150 and 200 millions of environmentally-displaced people. The ESF, in partnership with Bielefeld University and the Center for Interdisciplinary Research (ZiF), has initiated a

6. Research Institute for Sustainable Humanosphere
 7. Intergovernmental Panel for Climate Change



series of three biennial conferences that will explore the relationship between environmental degradation and forced migration. Starting in 2010, the series will discuss not only environmental, but also social, economic and political issues, which are emerging areas in this context.

The first conference in the series, subtitled 'Potential and Actual Forced Migration', will explore the complexity of factors that cause migration. In addition to environmental changes, it will also consider the contributory economic, political and social conditions. The discussions will aim to shed light on current debates over a definition of environmentally-induced migration and the terminology used in the field.

To enable such a multifactorial analysis, the conference, and the series in general, will aim to further the dialogue between geoscientists and social scientists. The only way to tackle this topic, explained Thomas Faist (Bielefeld University, DE), chair of the first conference, is to look at the objective, measurable environmental changes, studied by geoscientists, and then to focus on the projected responses of the people, governments and other non-governmental agents involved. The same environmental change can result in strikingly different responses – a fact to be explained via additional factors, such as the governmental response in these situations.

Europe hasn't seen much environmentally-induced migration: most environmental refugees are displaced nationally, relocating within the same country. Yet some European scientists and politicians outline a potential security threat to Europe and consequent economic, political and social disturbances. The second conference, entitled 'Environmental degradation, Forced Migration and Conflict', will address this issue. To overcome a simplistic correlation between the three phenomena, it will consider a range of other factors which can condition conflict, such as the vulnerability of certain groups of refugees. A number of non-European scientists working on local case studies will be invited in order to ensure that various examples of conflict are presented. 'The conferences will be a very appropriate opportunity to extend the links we have with researchers outside Europe and also with researchers in developing and transformation countries', commented Faist.

As with all ESF Research Conferences, young scientists are encouraged to participate in this new series. Given the novelty of the field, the scope for further research is broad. The conferences will therefore give young inves-

tigators a chance to present and discuss their work with senior colleagues.

The multidisciplinary discussions generated by this series will provide deeper insight into the factors which influence environmentally-linked human mobility. This could inform more holistic models which map out its patterns. Conference outcomes will also feed into the making of policy briefings with recommendations on the enhanced understanding, anticipation and management of environmentally-induced migration.

'The series will be an opportunity for both fields, environmental and migration research, to see the overlapping areas of interest between them. The conferences will concentrate not only on the developments in society but also on the interaction between humans and nature – a rising field for both environmental and social scientists, with major repercussions,' summarised Faist.

► More information:

www.esf.org/conferences/esf-zif-bielefeld

When pathogens strike

ESF-FWF-LFUI Conferences on 'The Impact of the Environment on Innate Immunity'

Climate change has major medical implications. As with human migration patterns, the extent of the implications of changes in temperature and precipitation on disease and illness has only been established during the past decade. Not only will our physical environment be affected, but disease prevalence, epidemiology and our ability to withstand epidemics will differ. Of particular immediate relevance are predicted changes in the immune systems of both animals and humans. Two ESF-FWF (Austrian Science Fund) – LFUI (Leopold-Franzens University Innsbruck) conferences highlight these issues, exploring environmental effects on innate immunity, resistance to disease and future treatment implications.

The first conference, which took place in 2007, concentrated on basic knowledge of invertebrates' innate immune protection, demonstrating a complex mechanism with a close analogy to that of humans. Twenty years ago, invertebrates' immunity was considered almost non-existent. New studies presented at the conference, however, identify immune responses (some of which highly specific) in a range of organisms, including fruit flies, snails and sea urchins. This came as a surprise for immunologists but was well in line with the expectations of ecologists and evolutionary biologists, who, on the basis of observation and modelling, had anticipated that there is more to innate immunity than was thought.

Innate defense was previously overshadowed by scientists' fascination with the specificity of the adaptive immune system and, in particular, with its antibody production. Now, though, innate immunity is proving to be the more robust of the two, able to eliminate up to 90% of pathogens before the adaptive system kicks in. Our changing environment brings about more parasites, toxins and stressors, which in turn could cause maladaptation and weaken the adap-



Participants at the 2007 conference on 'The impact of the environment on innate immunity' in Oberurgl, AT

tive immune capacity. Innate immunity, however, has the advantage of being less specific, less affected by external conditions and is therefore functional at almost all times. Potentially, it could be more harmful due to unwanted autoimmune effects, because it releases toxins which can affect the body's own tissue. Yet components of invertebrates' innate defense, when modified using biotechnology, can be used against parasites which have evolved and now resist existing treatment. Astonishingly, drugs derived in this new way, using antimicrobial peptides found in sea urchins for example, have the potential to be evolution-proof. They might not trigger counter evolution on the parasites' side.

The reasons for this, as well as the effectiveness of such drugs on a large scale, remain to be seen and will set the tone of the second, 2009 conference. Are natural conditions a necessity for the functioning of invertebrates' innate defense? Or can this functioning be replicated artificially to treat humans? The answers could lie in more cross-disciplinary talks between immunologists, ecologists and experimental biologists where the inner workings of the immune system are juxtaposed against epidemiology's and population biology's broader research scale. The facilitation of these talks will be the aim of the upcoming conference.

'When you have a broader perspective, you might see things in a different light', said Joachim Kurtz (University of Münster, DE), the chair of the 2009 conference. Such an approach brought about the hygiene hypothesis, the idea that early exposure to parasites and bacteria is essential for the development of the full capacity of the immune system, and one of the topics of the upcoming conference. 'People knew that the immune system is regulated on a very fine basis, according to exposure during childhood to antigens. People also knew there are more allergies in industrial countries, where parasites are scarce and exposure to bacteria minimal due to hygiene,' commented Kurtz. Put together, these two arguments have given the hygiene hypothesis its foundation: the more sterile a child's growing environment, the weaker his immune system and the higher his proneness to allergies as an adult. Although still debatable, the hygiene hypothesis can one day mean the end of allergies. By studying those parasitic substances which enhance the immune system's development, scientists could anticipate a person's predilection to allergy using genetic screens and administer prophylactic medication well before the allergy manifests.

A better understanding of invertebrates' immune defense can also advance treatment of vector diseases such as malaria, which are transmitted by intermediate hosts.

Altered environmental conditions facilitate the spread and mutation of pathogens, rendering classical antibiotics to treat these diseases obsolete. Yet insects acting as intermediates might manage to keep one step ahead and fight off infection thanks to their innate immune system. Talks by theoretical biologists at the upcoming 2009 conference will try to shed light on what makes some of the insects' defense mechanisms so universally infallible and how they can be used to boost human health.

'Seemingly more focused approaches to combat infectious diseases have had their limitations when confronted with the complexity of ecology in the 'real world,' explained Kurtz. The 2009 conference will therefore set the stage for immunologists, ecologists and evolutionary biologists to go beyond their normal horizon and see how their specialised areas of study are but one piece of the puzzle. This will enable them jointly to discuss how the immune system evolves and how can it be optimised at a time when pathogens are on the rise.

► More information:
www.esf.org/conferences/09223

ESF Research Conference on *Global change responses*

Meet our chair

Bengt Kasemo on nanotechnology for sustainable energy



Nanotechnological applications for sustainable energy development are high on the research agenda to address today's environmental changes.

Bengt Kasemo, a professor of physics at Chalmers University of Technology in Sweden, has a background in surface science, with specialties in automotive emission catalysis, biomedical and energy-related materials. He is currently doing research on energy-efficient catalysis and nanostructures for fuel cells, metal hydrides and solar cells.

Here, he talks about an ESF Research Conference on 'Nanotechnology for Sustainable Energy' which he recently chaired.

1. The conference addressed a broad range of topics, including nanotechnology's applications to primary energy supply, storage, conversion and use. There were discussions on light harvesting,

hydrogen, fuel cells, catalysis, batteries and thermoelectrics. Why did you opt for such a comprehensive approach?

Nanotechnology is an enabling technology so one cannot look at it as a tool with a single application. The conference programme was structured to outline what nanotechnology can do for future energy systems and what it can do in the transition from the present system to a future sustainable energy system.

The objective was two-fold: firstly, to expose younger participants (graduate students and postdocs) to the possibilities, opportunities and potential in this field through lectures by world-leading researchers. The second objective, necessary in order to get the right speakers, was to make the conference an interesting event for scientific interaction. Fortunately, the two objectives turned out to be perfectly compatible.

2. The major aims were to foster synergies between disciplines and people and to catalyse global contacts and collaborations. Did the outcomes reflect this?

Nanoscience and nanotechnology are self-assembling disciplines, they provide a tool box and concepts from a range of other disciplines, including physics, chemistry and even biology. Because of this, interdisciplinary discussions at the conference came more or less automatically.

Interdisciplinarity was also achieved on a vertical scale: we gathered speakers interested in basic science and others who were more device- and engineering-oriented. We therefore facilitated a connection across this hierarchy from basic science to the applications.

On the whole, the conference allowed young scientists to discover the opportunities within nanotechnology that can help face the challenge global society has in meeting the requirements of building sustainable energy systems. It also inspired senior scientists by outlining the overlap between analysis, development and application of nanostructures – they saw how much is to be learnt across the disciplinary borders and the synergies to be made from such an approach.

3. Do you see a follow-up conference developing?

Participants expressed massive support for this idea. If approved by the ESF, a second conference chaired by Michael Grätzel [*the vice-chair of the 2008 conference*] will definitely go ahead.

The first conference left us a huge list of possible speakers: a follow up can concentrate on most of the previous topical areas, solar cells, hydrogen storage etc., but with a new set of speakers. There will also be some new topics: for example the clean conversion of coal and low CO₂ use of coal, which is a sensitive issue when discussing sustainable energy, but a must in the transition from today's energy systems to the future energy systems. We're also planning more presentations from big industries, including Shell and E-On, which have undertaken interesting initiatives in this area. I think it is important that young scientists hear not only the promises of science, but also the industry's interests, and that they see the potential applications of their work.

4. Speaking of industry, how much nanotechnological research do we see applied?

If we draw a parallel with the launch of other scientific or

technological breakthroughs, such as Einstein's $E=mc^2$, the transistor or the laser, I identify an evolution period of 25, 35 or maybe 40 years until they had made an impact on a broad societal level. Nanotechnology is at an accelerating stage, where one may say 5-10 years have gone already, and where I can definitely see a number of niche applications on the short time scale, such as in solar batteries and catalysts. More long term, this emerging technology will impact virtually all energy technologies in 10, 15 or 30 years. With these timescales, I see nanotechnology as an evolutionary process rather than a revolution.

5. Finally, what are your personal impressions from the conference?

I am extremely satisfied with the results! It was a lot of work but it paid off even more than expected. It is so much easier to make an [ESF] conference, compared to one where you are in charge of everything, including the practical arrangements. The professionalism and support of the ESF Conferences Unit was absolutely invaluable and very, very much appreciated.

► More information:

www.esf.org/conferences/08257

News

• Results from the 2008 Call for Proposals

The ESF call for proposals for Research Conferences is generating more interest each year and the number of submissions is steadily rising.

This year, 83 proposals were received, almost twice as many as in 2007. For a breakdown by domain, please refer to the table below.

The proposals are currently being assessed through international peer review and will be shortlisted by expert panels in spring 2009. Proposals selected for funding will become part of the 2010 conference programme.

Domain	Number of proposals received
Molecular Biology	23
Mathematics 2009	14
Mathematics 2010	9
(Bio)physics, Environmental Science and Global Change Research	11
Social Sciences and Humanities	26
Grand Total	83

• Lower 2009 conference fees and more grants to stimulate the participation of young researchers

The ESF Research Conferences' fee structure has been revised as an incentive to increase the participation of young researchers, one of their key target groups. From 2009, more grants and lower fees for early registrations will be made available.

By implementing these changes, ESF hopes to make the conferences more accessible to scientists in all disciplines and stages of their careers.

► More information is available on the 2009 Conference Webpages: www.esf.org/conferences/2009

2009 ESF Research Conferences

PHYSICAL SCIENCES

- **GRAPHENE WEEK 2009**
Oberurgl, Austria, 2-7 March
- **EUROPEAN CONFERENCE ON SYNTHETIC BIOLOGY (ECSB) II**
Sant Feliu, Spain, 29 March-3 April
- **SPATIO-TEMPORAL RADIATION BIOLOGY: TRANSDISCIPLINARY ADVANCES FOR BIOMEDICAL APPLICATIONS**
Sant Feliu, Spain, 16-21 May
- **CELL POLARITY AND MEMBRANE TRAFFIC**
Sant Feliu, Spain, 23-28 May
- **MECHANISMS OF QUATERNARY CLIMATE CHANGE: STABILITY OF WARM PHASES IN THE PAST AND IN THE FUTURE**
Oberurgl, Austria, 6-11 June
- **NANOMEDICINE II (SUMMER SCHOOL)**
Lisbon, Portugal, 14-19 June
- **SELF-ASSEMBLY OF GUANOSINE DERIVATIVES: FROM BIOLOGICAL SYSTEMS TO NANOTECHNOLOGICAL APPLICATIONS**
Oberurgl, Austria, 20-25 June
- **BIOLOGICAL SURFACES AND INTERFACES**
Sant Feliu, Spain, 27 June-2 July
- **NANOCARBONS: FROM PHYSICO-CHEMICAL AND BIOLOGICAL PROPERTIES TO BIOMEDICAL AND ENVIRONMENTAL EFFECTS**
Sant Feliu, Spain, 8-13 September
- **CO2 GEOLOGICAL STORAGE: LATEST PROGRESS**
Oberurgl, Austria, 22-27 November
- **THE ORIGIN OF GALAXIES: LESSONS FROM THE DISTANT UNIVERSE**
Oberurgl, Austria, 12-17 December
- **NATURAL PRODUCTS CHEMISTRY, BIOLOGY AND MEDICINE II**
Acquafredda di Maratea, Italy (*date tbc*)
- **ASTRONOMY: GRIDS AND DATABASES**
Acquafredda di Maratea, Italy (*date tbc*)
- **COMPLEX SYSTEMS AND CHANGES**
Acquafredda di Maratea, Italy (*date tbc*)

LIFE, EARTH AND ENVIRONMENTAL SCIENCES

- **EUROPEAN CONFERENCE ON SYNTHETIC BIOLOGY (ECSB) II**
Sant Feliu, Spain, 29 March-3 April
- **THE IMPACT OF THE ENVIRONMENT ON INNATE IMMUNITY: THE THREAT OF DISEASES**
Oberurgl, Austria, 4-9 May
- **SPATIO-TEMPORAL RADIATION BIOLOGY: TRANSDISCIPLINARY ADVANCES FOR BIOMEDICAL APPLICATIONS**
Sant Feliu, Spain, 16-21 May
- **CELL POLARITY AND MEMBRANE TRAFFIC**
Sant Feliu, Spain, 23-28 May

- **MECHANISMS OF QUATERNARY CLIMATE CHANGE: STABILITY OF WARM PHASES IN THE PAST AND IN THE FUTURE**
Oberurgl, Austria, 6-11 June
- **SELF-ASSEMBLY OF GUANOSINE DERIVATIVES: FROM BIOLOGICAL SYSTEMS TO NANOTECHNOLOGICAL APPLICATIONS**
Oberurgl, Austria, 20-25 June
- **BIOLOGICAL SURFACES AND INTERFACES**
Sant Feliu, Spain, 27 June-2 July
- **NANOCARBONS: FROM PHYSICO-CHEMICAL AND BIOLOGICAL PROPERTIES TO BIOMEDICAL AND ENVIRONMENTAL EFFECTS**
Sant Feliu, Spain, 8-13 September
- **GENE EXPRESSION TO NEUROBIOLOGY AND BEHAVIOUR: HUMAN BRAIN DEVELOPMENT AND DEVELOPMENTAL DISORDERS**
Sant Feliu, Spain, 20-25 September
- **CO2 GEOLOGICAL STORAGE: LATEST PROGRESS**
Oberurgl, Austria, 22-27 November
- **GLOBAL CHANGES AND HEALTH**
Sant Feliu, Spain (*date tbc*)
- **NATURAL PRODUCTS CHEMISTRY, BIOLOGY AND MEDICINE II**
Acquafredda di Maratea, Italy (*date tbc*)
- **COMPLEX SYSTEMS AND CHANGES**
Acquafredda di Maratea, Italy (*date tbc*)

MEDICAL SCIENCES

- **EUROPEAN CONFERENCE ON SYNTHETIC BIOLOGY (ECSB) II**
Sant Feliu, Spain, 29 March-3 April
- **INFECTIOUS DISEASES: FROM BASIC TO TRANSLATIONAL RESEARCH**
Cape Town, South Africa, 4-9 April
- **THE IMPACT OF THE ENVIRONMENT ON INNATE IMMUNITY: THE THREAT OF DISEASES**
Oberurgl, Austria, 4-9 May
- **SPATIO-TEMPORAL RADIATION BIOLOGY: TRANSDISCIPLINARY ADVANCES FOR BIOMEDICAL APPLICATIONS**
Sant Feliu, Spain, 16-21 May
- **NANOMEDICINE II (SUMMER SCHOOL)**
Lisbon, Portugal, 14-19 June
- **GENE EXPRESSION TO NEUROBIOLOGY AND BEHAVIOUR: HUMAN BRAIN DEVELOPMENT AND DEVELOPMENTAL DISORDERS**
Sant Feliu, Spain, 20-25 September
- **RARE DISEASES II**
Sant Feliu, Spain (*date tbc*)
- **BIOBANKS II**
Sant Feliu, Spain (*date tbc*)

- **GLOBAL CHANGES AND HEALTH**
Sant Feliu, Spain (*date tbc*)
- **NATURAL PRODUCTS CHEMISTRY, BIOLOGY AND MEDICINE II**
Acquafredda di Maratea, Italy (*date tbc*)

HUMANITIES

- **SOCIAL COGNITIVE NEUROSCIENCE**
Acquafredda di Maratea, Italy, 27 February-4 March
- **SCIENCE AND VALUES: THE POLITICISATION OF SCIENCE**
Bielefeld, Germany, 25-30 May
- **PHILOSOPHY FOR SCIENCE IN USE**
Linköping, Sweden, 28 September-2 October
- **THE CHANGING USE AND MISUSE OF CATHA EDULIS (KHAT) IN A CHANGING WORLD: TRADITION, TRADE AND TRAGEDY**
Linköping, Sweden, 5-9 October
- **THE PERFECT BODY: BETWEEN NORMATIVITY AND CONSUMERISM**
Linköping, Sweden, 9-13 October
- **LAW AND COGNITION: OUR GROWING UNDERSTANDING OF THE HUMAN BRAIN AND ITS IMPACT ON OUR LEGAL SYSTEM**
Acquafredda di Maratea, Italy (*date tbc*)

SOCIAL SCIENCES

- **SOCIAL COGNITIVE NEUROSCIENCE**
Acquafredda di Maratea, Italy, 27 February-4 March
- **POST-CRISIS STATES TRANSFORMATION: RETHINKING THE FOUNDATIONS OF THE STATE**
Linköping, Sweden, 1-5 May
- **SCIENCE AND VALUES: THE POLITICISATION OF SCIENCE**
Bielefeld, Germany, 25-30 May
- **GENE EXPRESSION TO NEUROBIOLOGY AND BEHAVIOUR: HUMAN BRAIN DEVELOPMENT AND DEVELOPMENTAL DISORDERS**
Sant Feliu, Spain, 20-25 September
- **THE CHANGING USE AND MISUSE OF CATHA EDULIS (KHAT) IN A CHANGING WORLD: TRADITION, TRADE AND TRAGEDY**
Linköping, Sweden, 5-9 October
- **THE PERFECT BODY: BETWEEN NORMATIVITY AND CONSUMERISM**
Linköping, Sweden, 9-13 October
- **LAW AND COGNITION: OUR GROWING UNDERSTANDING OF THE HUMAN BRAIN AND ITS IMPACT ON OUR LEGAL SYSTEM**
Acquafredda di Maratea, Italy (*date tbc*)

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